

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 October 2005 (13.10.2005)

PCT

(10) International Publication Number
WO 2005/096064 A3

(51) International Patent Classification⁷: **G02B 26/10**,
27/28, H04N 3/09, H01Q 15/00, 15/24

(21) International Application Number:
PCT/GB2005/000698

(22) International Filing Date: 25 February 2005 (25.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0407136.1 30 March 2004 (30.03.2004) GB
0424268.1 2 November 2004 (02.11.2004) GB

(71) Applicant (for all designated States except US): **FARRAN
TECHNOLOGY LIMITED (IE/IE)**; Ballincollig Indus-
trial Estate, Ballincollig, County Cork (IE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **LETTINGTON,
Alan, Harold** (GB/GB); 5 Crosfields Close, Reading,
Berkshire RG2 9AY (GB).

(74) Agent: **CARSTAIRS, J., C.**; Forrester Ketley & Co, For-
rester House, 52 Bounds Green Road, London N11 2EY
(GB).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,
ZM, ZW.

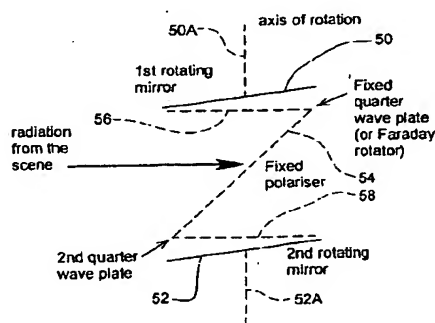
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

[Continued on next page]

(54) Title: **SCANNING APPARATUS**



(57) Abstract: A scanning apparatus operable in the microwave, mm-wave, sub mm-wave (Terahertz) and infrared ranges comprises a primary drum (10) mounted for rotation about a central axis A of the primary drum being hollow and of rectangular polygonal form to provide a number of sides or facets (12, 14) each adapted to transmit such radiation, from a field of view, which is plane polarised in a first direction at 45° with respect to the rotary axis of the drum and to reflect radiation which is plane polarised in an orthogonal direction. Thus, radiation passing into the drum through whichever said side of the drum is currently facing the field of view and passing towards the diametrically opposite side will be plane polarised with a polarisation direction such as to be reflected back by that diametrically opposite side towards the rotary axis of the drum. Each polygon side of the drum is configured so as to act, when reflecting radiation striking that side from within the drum, as a concave mirror, to focus the radiation towards a receiver assembly which includes a radiation detector for such radiation. In another embodiment scanning apparatus operable in the microwave, sub mm-wave, mm-wave and infrared ranges may comprise a reflective disc or mirror (50', 52') mounted for rotation relative to a support (74, 76) is itself mounted for rotation with respect to a second support (86) about a second axis inclined with respect to the first axis.

WO 2005/096064 A3



(88) Date of publication of the international search report:
22 December 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 October 2005 (13.10.2005)

PCT

(10) International Publication Number
WO 2005/096064 A2

(51) International Patent Classification⁷: **G02B 26/00**

(21) International Application Number:
PCT/GB2005/000698

(22) International Filing Date: 25 February 2005 (25.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0407136.1 30 March 2004 (30.03.2004) GB
0424268.1 2 November 2004 (02.11.2004) GB

(71) Applicant (for all designated States except US): **FARRAN TECHNOLOGY LIMITED [IE/IE]**; Ballincollig Industrial Estate, Ballincollig, County Cork (IE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **LETTINGTON, Alan, Harold** [GB/GB]; 5 Crosfields Close, Reading, Berkshire RG2 9AY (GB).

(74) Agent: **CARSTAIRS, J., C.**; Forrester Ketley & Co, Forrester House, 52 Bounds Green Road, London N11 2EY (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AF, AG, AI, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SI, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **SCANNING APPARATUS**

(57) Abstract: A scanning apparatus operable in the microwave, mm-wave, sub mm-wave (TeraHerz) and infrared ranges comprises a primary drum (10) mounted for rotation about a central axis A of the primary drum being hollow and of rectangular polygonal form to provide a number of sides or facets (12, 14) each adapted to transmit such radiation, from a field of view, which is plane polarised in a first direction at 45° with respect to the rotary axis of the drum and to reflect radiation which is plane polarised in an orthogonal direction. Thus, radiation passing into the drum through whichever said side of the drum is currently facing the field of view and passing towards the diametrically opposite side will be plane polarised with a polarisation direction such as to be reflected back by that diametrically opposite side towards the rotary axis of the drum. Each polygon side of the drum is configured so as to act, when reflecting radiation striking that side from within the drum, as a concave mirror, to focus the radiation towards a receiver assembly which includes a radiation detector for such radiation. In another embodiment scanning apparatus operable in the microwave, sub mm-wave, mm-wave and infrared ranges may comprise a reflective disc or mirror (50', 52') mounted for rotation relative in a support (74, 76) is itself mounted for rotation with respect to a second support (86) about a second axis inclined with respect to the first axis.

WO 2005/096064 A2